ASPIRIN OVERDOSE: WHAT IS A REALISTIC RISK ASSESSMENT?

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BACKGROUND

Aspirin is a metabolic poison and overdoses cause acid-base disturbance and organ dysfunction. Risk assessment has been based on the recognised severity of chronic poisoning reported over 40 years ago. We investigated the severity of acute aspirin overdose and predictors of toxicity.

METHODS

We undertook a retrospective series of acute aspirin overdoses presenting to two toxicology units from January 2000 to September 2019. Aspirin exposures >3000mg were identified in prospective clinical databases from toxicology presentations. Clinical notes were reviewed to obtain demographic data, clinical effects, investigations, complications and treatment.

RESULTS

There were 170 cases in 143 patients (98 females [69%]) with a median age of 28 years (Interquartile range [IQR]: 20-44 years). Patients presented a median of 3.5 h (IQR: 1.7-7.2 h) post ingestion following a median aspirin ingestion of 7200mg (IQR 3300-86400mg). Co-ingestions were taken in 131 (77%) presentations. Activated charcoal was given in 37 (22%) presentations a median of 3.0 h (IQR: 2-4.5 h) post-ingestion.

Common clinical features were tinnitus in 36 patients (21%), vomiting in 45 (26%) and tachypnoea (respiratory rate >20 breaths per minute) in 61 (36%). Confusion, coma (GCS <9) and hypotension occurred in 15 (9%), 9 (5%) and 17 (10%) cases respectively, although in most cases these were attributable to co-ingestions. A bicarbonate <20 mmol/L occurred in 38 (22%) presentations.

The median peak aspirin concentration was 276mg/L (IQR: 168-400mg/L). There was a strong association between dose ingested and peak concentration (Pearson r=0.55; p<0.0001 [Figure 1]). There was a small negative association between dose ingested and bicarbonate (Pearson r=-0.21; p=0.012 [Figure 2]).

There were four cases of severe toxicity, ingesting 372mg/kg, 480mg/kg, 1440 mg/kg and 333mg/kg. Peak salicylate concentrations were 814mg/L, 800mg/L, 759mg/L and 745mg/L, respectively. Urinary alkalinisation was performed in 35 (21%) presentations. No patient required dialysis and no patient met any of the EXTRIP criteria for dialysis. Twenty-one patients were admitted to ICU. The median length of stay was 18 h (IQR: 7-24 h).

CONCLUSIONS

Acute aspirin overdose caused only mild toxicity in most cases. There were few cases of severe toxicity with peak salicylate concentrations >700mg/L, all ingesting doses >300mg/kg. Both salicylate concentration and bicarbonate were associated with dose ingested.